

Upon entry of this Amendment, the following listing of claims replace prior versions and listings of claims in the application.

Please replace the pending claims with the following listing of claims:

Listing of Claims:

1. (Currently Amended) *An in vitro* method for the production of a homologous heart valve, comprising the following steps of:
 - a) provision of providing a biodegradable support (scaffold),
 - b) colonization of colonizing the support with homologous fibroblasts and/or myofibroblasts cells or a combination thereof to form a connective tissue matrix,
 - c) optionally colonization of colonizing the connective tissue matrix with endothelial cells, and
 - d) fixing of the connective tissue matrix to a non-degradable or poorly degradable frame construction (stent),
wherein, before and/or after the fixing to of the frame construction, the connective tissue matrix optionally colonized with endothelial cells is introduced into a pulsatile flow chamber in which it can be exposed to increasing flow rates, and the flow rate is increased continuously or discontinuously.
2. (Currently Amended) *An in vitro* method for the production of a homologous heart valve, comprising the following steps:
 - a) provision of providing a biodegradable support (scaffold) which is firmly connected to a non-degradable or poorly degradable frame construction (stent),
 - b) colonization of colonizing the support with homologous fibroblasts and/or myofibroblasts cells or a combination thereof to form a connective tissue matrix,
 - c) optionally colonization of colonizing the connective tissue matrix with endothelial cells,

- d) ~~introduction of introducing~~ the frame construction with the connective tissue matrix connected thereto into a pulsatile flow chamber in which it can be exposed to increasing flow rates, and
e) continuously or discontinuously increasing of the flow rate.
3. (Currently Amended) The Method method according to ~~one~~ of claims 1 to or 2, ~~characterized in that wherein~~ the biodegradable support is comprises a biodegradable polymer matrix or an acellular biological matrix.
4. (Currently Amended) The Method method of according to one of claims 1 to 3, ~~characterized in that wherein~~ the support is comprises a polyglycolic acid (PGA), polylactic acid (PLA), polyhydroxyalkanoate (PHA), poly-4-hydroxybutyrate (P4HB) or a mixture of two or more of these polymers.
5. (Currently Amended) The Method method according to ~~one~~ of claims 1 to or 2, ~~characterized in that wherein~~ the support has a polymer density of 40 to 120 mg/cm³, ~~preferably 50 to 80 mg/cm³~~.
6. (Currently Amended) The Method method according to ~~one~~ of claims 1 to or 2, ~~characterized in that wherein~~ the support is comprises a porous polymer having a pore size of 80 to 240 µm.
7. (Currently Amended) The Method method according to ~~one~~ of claims 1 to or 2, ~~characterized in that wherein~~ the fibres fibers of the support have a diameter of 6 to 20 µm, ~~preferably 10 to 18 µm~~.
8. (Currently Amended) The Method method of according to one of claims 1 to 23, ~~characterized in that wherein~~ the support is comprises an acellular connective tissue framework of an animal or human heart valve.

9. (Currently Amended) The Method method according to one of claims 1 to or 2, characterized in that wherein the step of colonization with fibroblasts and/or or myofibroblasts cells or a combination thereof fibroblasts and/or myofibroblasts is repeated 3 to 14 times, preferably 5 to 10 times.
10. (Currently Amended) The Method method according to one of claims 1 to or 2, characterized in that wherein approximately 10^5 to 6×10^8 fibroblasts and/or or myofibroblasts cells or a combination thereof are employed per square centimetre centimeter of support/matrix and colonization step.
11. (Currently Amended) The Method method according to one of claims 1 to or 2, characterized in that wherein the step of colonization with endothelial cells is repeated 3 to 14 times, preferably 5 to 10 times.
12. (Currently Amended) The Method method according to one of claims 1 to or 2, characterized in that wherein approximately 10^5 to 5×10^8 endothelial cells are employed per square centimetre centimeter of support/matrix and colonization step.
13. (Currently Amended) The Method method according to one of claims 1 to or 2, characterized in that wherein the cells fibroblasts and/or myofibroblasts and/or endothelial cells are human cells.
14. (Currently Amended) The Method method according to one of claims 1 to or 2, characterized in that wherein the cells fibroblasts and/or myofibroblasts and/or endothelial cells are autologous cells.

15. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the frame construction comprises is made of a biocompatible ~~non-degradable~~ material.
16. (Cancelled)
17. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the support is fixed to the frame construction by means of conventional suturing, ~~and/or~~ fibrin adhesive, or a combination thereof.
18. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ flow rates of 5 ml/min to 8,000 ml/min, ~~preferably 50 to 2,000 ml,~~ are established in the pulsatile flow chamber.
19. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the flow rate is increased over a period of 1 week to 12 weeks.
20. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the initial flow rate is 50 to 100 ml/min.
21. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the initial pulse frequency is 5 to 10 pulses/min.
22. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the flow rate is increased to 5,000 ml/min.
23. (Currently Amended) The Method method according to ~~one~~~~of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the pulse frequency is increased to 180 pulses/min.

24. (Currently Amended) The Method method according to one of claims 1 to or 2, characterized in that wherein systemic pressures of 10 to 240 mm Hg are established in the pulsatile flow chamber.
25. (Currently Amended) An autologous Autologous heart valve, characterized in that it has been produced by a the method according to one of claims 1 to or 2.
26. (Currently Amended) An autologous Autologous heart valve having a connective tissue inner structure surrounded by an endothelial cell layer, wherein the connective tissue inner structure characterized in that it is fixed to a non-degradable or slowly degradable frame construction (stent).
27. (Currently Amended) The autologous Autologous heart valve according to claim 26, characterized in that wherein a collagen density of 20 to 60 % exists in the connective tissue ~~core~~ inner structure.
28. (Currently Amended) The autologous Autologous heart valve according to claim 27, characterized in that wherein it the heart valve withstands the flow conditions in the human heart.